1989-12-01

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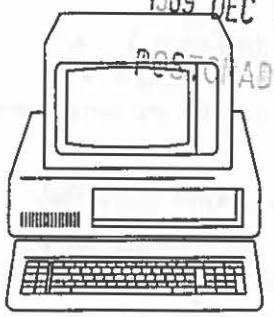
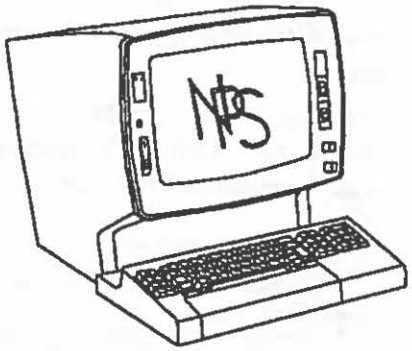
Monterey, California, Naval Postgraduate School



Computer Center BULLETIN

Naval Postgraduate School Monterey, California



December 1, 1989

Mainframe Announcements

3480 Cartridge Tape

The Computer Center's Operations department has begun the conversion of NPS magnetic tapes from 3400 reel tapes to 3480 cartridge tapes. Cartridges offer major advantages over reel tapes: easier handling, faster data transfer, and higher data capacity. Since the magnetic tape is packaged like a video cassette, cartridges should suffer less data loss from mechanical and environmental problems.

The Computer Center's cartridge tape units are IBM 3480 Model B22. The magnetic tape is 1/2 inch wide and enclosed in a plastic case 4" by 5" by 1". The data are written on 18 tracks with an approximate density of 38,000 bpi. The data transfer rate is 3.0 megabytes per second. Instead of the old "write-enable" ring, the file protection mechanism is a thumbwheel selector on the rear of the cartridge.

The following table compares the capacity (megabytes of data) of a 6250 bpi, 2400-foot reel tape and a cartridge tape at different block sizes. The cartridge has a larger capacity when the blocks are 3K or more.

blksize	reel tape	cartridge
1K	60M	54M
2K	90M	87M
4K	120M	126M
8K	144M	163M
16K	160M	191M
24K	165M	202M
32K	169M	208M

Job Control Language

The job control language (JCL) for cartridge tape is similar to reel tape. The LABEL, DCB, DISP, and DSNAME parameters retain their same functions. Cartridge tape uses a different UNIT value ("3480"), and the "DEN" parameter is not in-

cluded because the 3480's record at only one density.

The following example compares the JCL for writing to a 1600 BPI standard label reel tape with a standard label cartridge tape:

```
(Reel)
//DD1 DD DSN=OLDTAPE.DATA,DISP=(NEW,PASS),
//       UNIT=3400-6,LABEL=(1,SL),VOL=SER=NPS999
//       DCB=(LRECL=80,BLKSIZE=6400,RECFM=FB,DEN=3)
(Cartridge)
//DD1 DD DSN=NEWTAPE.DATA,DISP=(NEW,PASS),
//       UNIT=3480,LABEL=(1,SL),VOL=SER=NPS000
//       DCB=(LRECL=80,BLKSIZE=6400,RECFM=FB)
```

Be sure to fill in the proper DSN for the Data Set Name to be created, the sequence number of the Dataset in the LABEL parameter and the LRECL, BLKSIZE and RECFM (Logical RECord Length, BLocK SIZE and RECord ForMat).

NPS Tape Library

All users are eligible to sign up for cartridge tapes from the NPS tape library. The VOLSER names are NPS001 through NPS999. The Computer Center stores these tapes in the machine room. They are accessible by an MVS job at any time.

Effective immediately, you will be assigned a tape cartridge when you sign up for an NPS tape.

Utilities

Most tape utilities will handle the cartridge tapes without any problem. The CMS facility TAPEHELP writes TSCAN, TLABEL, and simple TAPE programs for you. TSCAN (scan tape files) and TLABEL (document a standard label tape) both work with cartridges. The TAPE utility (dump files) predates cartridges. It will report a cartridge density of 800 bpi which is incorrect. The Computer Center has requested a new release of TAPE from Princeton University.

MVSTAPE (copy CMS files to tape) has been modified to write onto cartridges.

The CMS facility MVSHELP provides example JCL for cartridges. Access MVSHELP and select 'Examples of MVS Utility Programs' (Option 7). Next select from among options 4 (investigating cartridges), 5 (copying from cartridges to disk), or 6 (copying from cartridge to reel tapes).

Please direct any questions to Karen Yates, In-111, x2539, or Dennis Mar, In-102A, x2672.

Dennis Mar and Karen Yates

IBM 3033AP On Campus-Wide Ethernet

The IBM 3033 is now available on the campus-wide ETHERNET. The VM Host address of the IBM 3033 is 131.120.254.50 which can be accessed from any computer with ETHERNET connectivity and TCP/IP software supporting FTP, TELNET or TN3270.

For File Transfer users, an anonymous logon procedure with userid *INTERNET* and password *GUEST* has been established. This userid and password may be used to establish VM connectivity, followed by an FTP *CHANGE WORKING DIRECTORY* command to establish the VM mini-disk to be accessed. The password which must be supplied in response to the *CHANGE DIRECTORY* command must be the read or write share password of the disk in question. Please refer to your local host documentation for specific FTP commands. The following is a general example of an FTP session:

```
OPEN 131.120.254.50          issue open command to FTP
USER INTERNET GUEST          supply user id
CD 5026P.191                 point to minidisk
ACCOUNT  password            supply read or write password
PUT D:LOCAL1.FILE VMFNAME.VMFTYPE
CLOSE
QUIT
```

The password supplied when using this procedure must be a WRITE share password if files are to be transferred to a CMS mini-disk. A READ or WRITE share password may be used if files are to be copied from CMS to a remote host. Note also that the CMS TCP/IP software expects that the CMS filename and filetype will be separated with a period rather than a space as is normally expected in the CMS environment.

For questions or assistance with TCP/IP or ETHERNET connectivity to the IBM 3033, please see Alyce Austin (In-102B) or Caroline Miller (In-102C) in the Computer Center.

Alyce Austin

New Thermal Color Printer

The Computer Center now has available a Tektronix 4693 thermal color printer for graphics users. It will print CA-Disspla metafiles and IBM's ADMGDF files. This includes graphics produced by CA-Disspla, Grafstat, ICU, and DSL. In the near future graphics in CGM and HPGL metafile formats may also be printed on the color printer. This would include those produced by personal computer software packages in CGM or HPGL metafile format. Watch for the announcement of this capability.

The new color printer is located in In-110. It uses 8½ x 11 and 8½ x 14 paper or prints directly to overhead projection film. It has exceptional image quality, 300 dots per inch, with an extensive set of built-in image processing features including gamma correction, image sizing and image aspect ratio adjustment. A range of 16.8 million colors and shades are available for imaging; eight colors are available for drafting, line drawing applications and plots.

printer . . . 16.8 million colors . . . 300 dots per inch . . . Disspla, Grafstat, ICU

The color printer is directly connected to the mainframe through a 4510A rasterizer. This means that you can send a graphics file to the color printer from any terminal connected to the mainframe with just one command.

Because of the high cost per printed sheet, only final copies requiring color may be printed. For this reason, (and because this is still a beginning experimental period) the color printer is located in In-110. Those requiring color graphics should make an appointment with June Favorite in In-110, x3432, userid 0052p. If June is not in the office leave a message on the bulletin board outside her office; include your name, userid, and a phone number where you can be reached.

Those interested in seeing samples of the type of color graphics produced by the TEK 4693 color printer should stop by In-110.

June Favorite

Micro Lab News

New Micro Lab Scanner

The Micro Lab has a new document/image scanner. This is the Discover 7320 scanner connected to station S22. The scanner accepts text and graphic images and converts them into popular wordprocessing and graphic formats. There are copies of the scanner software documentation in green binders in the Micro Lab.

The scanner is equipped with a document feeder. This feature is available when scanning text documents; remember to place your documents **face up** in the feeder tray. When scanning an image, place the image on the glass plate **face down.**

To use the scanner, log onto the network as yourself or as S22. The scanner software is menu-driven. For scanning text documents into WordPerfect format, using the default settings, type SCANTEXT <filename> at the DOS prompt. Do not give an extension to your filename; a .WPF extension will be added. For scanning images into .PCX format, using the default settings, type SCANIMG <filename> at the DOS prompt. Again, do not give an extension to your filename; a .PCX extension will be added.

If you want to use custom settings, invoke the software by typing SCAN at the DOS prompt. Unfortunately, the sequence of commands required to use the scanner menu interface is not entirely intuitive. The Micro Lab has a handout (near the scanner) which explains the sequence of commands required to scan a text document using the menu interface. Once you are familiar with this sequence, you will be able to use the menu interface for custom settings and more effective scanning.

Jim Horning

Document Compare

It happens every time! You distribute a revised copy of your thesis or any other document and the reviewers want to compare it with the previous version to see where the changes are. Now

there is a simple and accurate way to track these changes as your document evolves. DocuComp has been installed on the network in the Micro Lab. Docucomp identifies insertions, deletions and even replacements and moved blocks.

DocuComp provides split-screens to allow you to view both documents at the same time. You can also print a "redlined" comparison showing all the differences, complete with a summary list of changes showing the page and line where each change is located.

Docucomp supports many word processors. The installed version in the Micro Lab works with WordPerfect 5.0

Kathy Strutynski

Shared PCs in the Micro Lab

Some microcomputers in the Micro Lab have signs requesting the user not to turn the machine off or re-boot it. These microcomputers are used by the network to control the printing. It is important that you adhere to these requests so that other users on the network can continue printing. If you re-boot or turn the machine off, only members of the Micro Lab staff can reestablish the printing function and they may not be available.

Printing

Are you frustrated after battling the printers in the Micro Lab? You can transfer your document to VM WordPerfect and print on the fast printers on the mainframe. You must first save your document in 4.2 format. (This is one of the choices on the CTRL-F5 key.) Then you can transfer it as a binary file to your account on the mainframe. See the directions in the small frames next to the microcomputers in the Micro Lab. When you transfer the file do not include the options "ASCII CRLF"

Micro Lab Help Available

Now that the Computer Center talks have subsided until next quarter, a lot of users have asked where they can get help on software. Help on software can be found in a few different places in the Micro Lab. For software help in WordPerfect or PlanPerfect, you can hit the <F3> key twice to retrieve extensive on-line help. Most widely used software has on-line help available. Hardcopy documentation is available for DOS, WordPerfect, PlanPerfect, and all hardware peripherals (printers, scanners, etc) in the Micro Lab. There are a number of handouts available outside In-104 which give a summary of important commands and short instructions on how to use Micro Lab supported software. Here is a list of available topics:

1. SIMPC
2. Importing Graphics into WordPerfect 5.0
3. Xerox to IBM document conversion
4. WordPerfect VM (mainframe)
5. Scanner

More information can be derived from placards inside the Micro Lab, documentation reference manuals, or the consultants.

Naren Tayal

VM Tips

PSEG Exec Now Retains Settings

The PSEG exec is used to prepare graphics files from DISSPLA, GRAFSTAT, etc. for printing on the mainframe 3800 printer. The graphics may be printed either independently or as parts of SCRIPT files including text. PSEG usage is described in Appendix K of Technical Note VM-06, the GML tutorial.

The PSEG exec has been modified so that it retains the settings (filename, length, width, disk for output file, etc.) from the previous run. It doesn't matter whether the previous run was during the current session. In doing this, the exec creates a file called LASTING GLOBALV. If you want PSEG to remember your settings, don't erase that file.

For further help in using PSEG, contact Larry Frazier, In-113, x2671, userid 0084p.

Larry Frazier

Reversing Axes in DISSPLA

DISSPLA can plot your two-dimensional graphs with the axis reversed (so that the maximum value is at the origin, and the values decrease when moving in a positive direction along the axis). Both the X and the Y axes are reversed in the following example.

In this example, five primary graph setup routines allow for a variety of axis scaling. To reverse the axis using any of these routines, just specify the maximum value for the origin parameter, a negative step size, and if required, the minimum value for the MAX parameter.

```
CALL GRAF (XORIG,XSTEP,XMAX,YORIG,YSTEP,YMAX)
```

In the above, X and Y axes both have units/division and the user defines the step length.

```
CALL XGRAF (XORIG,XSTEP,XMAX,YORIG,YSTEP)
```

In the above, the maximum value of Y is determined by the data.

```
CALL YGRAF (XORIG,XSTEP,YORIG,YSTEP,YMAX)
```

In the above, the maximum value of X is determined by the data.

```
CALL XLOG (XORIG,XCYCLE,YORIG,YSTEP)
```

In the above, the X axis is in a log scale and the Y axis is in a linear scale.

```
CALL YLOG (XORIG,XSTEP,YORIG,YCYCLE)
```

In the above, the X axis is in a linear scale and the Y axis is in a log scale.

To produce the graph shown, this CALL was used:

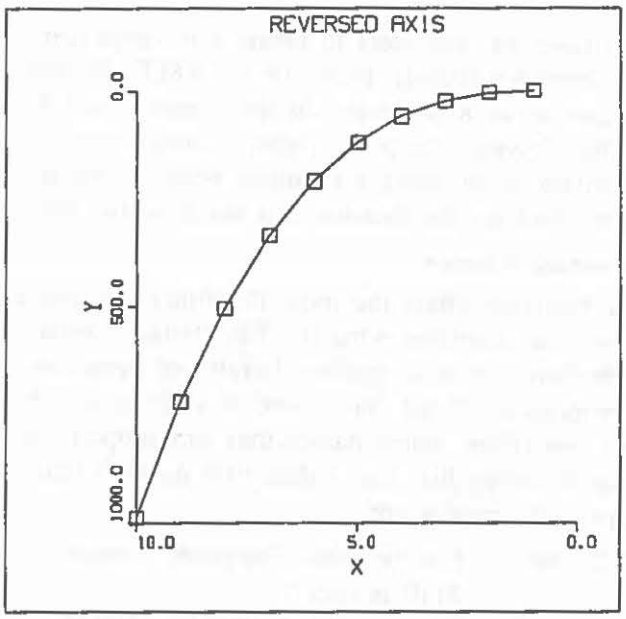
```
CALL GRAF (10.,-5.,0,1000.,-500.,0.)
```

In this graph, 10 is the maximum value of X; 1000 is the maximum value of Y; and these values are used as the ORIG values. Each STEP parameter is negative, -5 for X and -500 for Y. The minimum value for each axis is 0 and is used in the CALL as the MAX value.

Helen Davis

Sideways Printing with GThesis

For theses done on the mainframe with GThesis, it is now possible to print data, listings, etc., 132



characters wide, sideways on a page, with the page number right side up at the bottom of the page. Except in special cases, the only rotation available is such that you would move the top of the page counter-clockwise to read the sideways material (the top of the sideways material is at the left edge of the page, toward the binding). The print is gothic 7 semicondensed. This font is shown near the top of page 39 in Technical Note VM-06 GML: *A Tutorial.* To do this, put the command

```
.im sidstart
```

at the beginning of the material to be printed sideways, and put

```
.im sidend
```

at the end of the material to be printed sideways. This works only with the PROP option on the Script menu.

Larry Frazier

Choosing Good Fileids in CMS

Have you ever needed to reference a file from some time past and could not readily find it because you forgot what you called it? If you choose descriptive file names in the beginning, you can save lots of time later by not having to view files to determine their contents.

You have 18 characters to create a recognizable file identifier (fileid). Each file on VM/CMS may contain up to 8 characters in the filename and 8 in the filetype. The programmer cannot exercise creativity in choosing a filemode because this is determined by the location and status of the file.

Filename Choices

The filename offers the most flexibility. Choose a name that describes what the file contains, what it performs or what system (family) of programs it belongs to. If the file is one of a series of jobs in a procedure, select names that sort properly in your directory list. Use a date in a name if that applies. Examples are:

CS2110P1	For the class Computer Science 2110 project 1.
CS211P1D	For the class Computer Science 2110 project 1's data.
PAYROW01	First job in a weekly payroll process.
PAYROM02	Second job in a monthly payroll process.
WK121189	Your weekly schedule for the week starting December 11, 1989.

Never choose names like X1 or XXX1 etc. They may mean something now, but as your directory grows, such names become meaningless. Reserved names, like PROFILE, LASTING, or SESSION, should be avoided in order to avoid confusion with such files that are used for special purposes.

Filetype Choices

Choice of filetype is somewhat restricted. The filetype is often used by the operating system to convey information about file characteristics as illustrated below:

- Program source code files are usually named according to conventions established by a particular compiler, for example FORTRAN or COBOL.
- Filetype DATA makes the record length 80 and characters uppercase.
- Filetype EXEC is used by interpreters and defines a file of commands and control statements.
- Filetype LISTING causes the Print command to read anything in column one as characters to control printout.

Filetypes may be renamed for storage and renamed again as required for execution, but this requires the programmer to remember the temporary filetype. Therefore, it is not recommended.

If the job is to be run on batch and not VM, the user has wide flexibility as in the filename. Don't use filetypes SCRIPT or MEMO, since these allow lower case characters which cause compiler errors or Job Control Language (JCL) errors. It might be wise to choose a filetype that indicates that the file includes JCL for submission to the batch system; for example, MVS, JCL, or BATCH.

Neil Harvey

FORTRAN Notes

Underflow Controls in VS Fortran

Most Fortran programmers have experienced the problem of repeated floating-point underflow exceptions during execution of their programs. In VS Fortran this message is labeled "IFY208I VFNTH: PROGRAM INTERRUPT (Z)-FLOATING-POINT UNDERFLOW EXCEPTION ... " under Version 1; the exception is designated AFB208I under Version 2. This situation occurs when the result of a floating point (real arithmetic) operation would be less than 16.**-65, which is approximately 5.4E-79. This is an "illegal" operation because numbers of such small magnitude cannot be expressed under the architectural conventions of the IBM 3033.

There is no great inconvenience to the programmer when this diagnostic is received, since the standard corrective action taken by Fortran's error-handling routines is to set the result to zero and continue the calculation. Normally information about five such exceptions is displayed; subsequently diagnostics are suppressed. The total number of occurrences is written to unit 6 at the end of the calculation. Any number of occurrences is allowed.

The task of the programmer is be sure this exception is legitimate, that is, that it has occurred as expected numerically and is not the result of a programming mistake, such as mixing double and single precision arguments across a subroutine CALL. After being convinced all is OK computationally, the programmer usually wants to eliminate the long diagnostic messages from his/her output, where they are mixed into the normal output produced by the program.

IBM Fortran compilers have always provided a way for programmers to control the error-handling procedures. If the desired action is to allow any number of floating-point underflows and to suppress all diagnostic messages during execution, the following statement can be added to the Fortran source code before the first exception occurs:

```
CALL ERRSET (208,256,-1)
```

Usually such a directive is placed as the first executable statement of the main program. Such directives are discussed in much detail in chapter 9 of *VS Fortran Version 2 Language and Library Reference*, SC26-4221.

CALL XUFLOW (0) to suppress all underflow messages, or CALL XUFLOW (1) to activate such messages.

However, the recommended procedure for controlling underflow exceptions is to use the auxiliary Fortran routine XUFLOW, which is included in both Version 1 and 2 of VS Fortran. The programmer need only use:

```
CALL XUFLOW (K)
```

in his/her code, where K=0 in order to suppress all underflow messages, or K=1 to activate such messages. This allows different approaches to the matter in different areas of the program.

Finally, a third method of control is provided through run-time parameters NOXUFLOW and XUFLOW. It applies for the entire execution (unless overridden by a CALL XUFLOW(K)).

Under CMS issue

```
LOAD <filename>
START * NOXUFLOW
```

(or XUFLOW, which is the default anyway)

Under MVS include

```
// EXEC FORTVCLG,PARM.GO=NOXUFLOW
```

In either case the NOXUFLOW parameter turns off underflow messages.

Roger Hilleary

How Big Are Your Arrays?

This article offers some guidelines for mainframe Fortran users regarding how large their programs can be. The memory area used to execute a user's program is filled with the compiled program, system subroutines, and input/output buffers. CMS users can obtain 1500K (called "virtual storage") and MVS users, 4096K (called "region") without special arrangements.

The size of a compiled program is related to the number of instructions and the number of variables and arrays. Each integer or real variable will occupy four bytes; each double precision variable, eight bytes; a double precision array of 100 elements takes 800 bytes.

Often, a program's size is driven by the size of the arrays. As an example of an upper limit, no MVS program could contain real arrays with more elements than (2048*1024/4)=524,288 when executing in REGION=2048K. Since program instructions, other subroutines, and buffers also occupy space, the actual maximum number of elements is much less.

Parameter Statement

If the program logic allows a user to change the size of the arrays, the PARAMETER statement is a convenient method for doing this. In this statement, variable names are assigned values. These names can then be used in all types of statements including DIMENSION and DATA.

In the following code, the size of the arrays can be modified easily by changing the value of N.

```
PARAMETER(N=10)
```

```
DIMENSION X(N,N)
....
CALL SUB(X,N)
....
SUBROUTINE SUB(Y,N)
DIMENSION Y(N,N)
....
```

CMS Considerations

Each general CMS user automatically obtains 1024K of virtual storage. Virtual storage can be increased to 1500K by typing

```
GETSTOR 1500K
```

The maximum virtual storage available to each userid can be changed. Requests for more than 1500K should be directed to Ruth Roy, In-147 (up to 2048K), or Rich Donat, In-107 (over 2048K).

Of the virtual storage available, about 303K is used by CMS. The remaining storage is available to the user's program, Fortran-supplied subroutines, and input/output buffers. The Fortran-supplied subroutines include the input/output subroutines and intrinsic functions such as EXP or SIN.

If available storage is exceeded, the system often prints the message "80A, virtual storage capacity exceeded." At other times, the error message may be misleading, such as complaint about a correctly written FILEDEF statement.

To see how much space is required for a compiled Fortran program (for example, "MYPROG TEXT"), use the LOAD command:

```
LOAD MYPROG
```

The system creates a file: LOAD MAP. The following is an abbreviated example of this file.

```
MAIN      SD 020000
IFYVINTE SD 020330
VFEIM#       02033E
VFEIN#       020372
```

The hexadecimal number to the right is a starting address of each module. MAIN is the user's main program. Its length is (20000-20330)=330 (hex) or 816 (decimal) bytes.

The user's virtual storage is normally set at 1024K. All the modules listed plus input/output buffers must fit within (1024K-303K)=721K. The load map does not indicate the length of the last module (VFEIN#). However, the difference between the first address (20000) and the last address (20372) gives a rough idea of the total bytes necessary: 372 (hex) or 882 (decimal) bytes.

Usually, CMS input/output buffers are quite small. The space they require can be ignored in roughly estimating the maximum size of a program. To read a file with lines 80 characters wide only requires a buffer of 80 bytes.

In CMS, the user's Fortran program may share space with other programs such as BROWSE, SCRIPT, or FILELIST. When you use BROWSE, the BROWSE module remains in the virtual storage area and reduces storage available for a Fortran program. This lost space may account for situations in which a program runs, BROWSE is used, the program is run again and fails by exceeding virtual storage capacity.

If the program exceeds storage capacity, first use GETSTOR to increase virtual storage. If virtual storage is at maximum, try LOADing the Fortran program from the CMS environment and not from FILELIST.

To free all available storage, type IPL CMS to re-initialize CMS. (Don't IPL CMS when you are editing a file.) Then proceed with any FILEDEF statements and LOADing the program.

Lastly, examine the Fortran program to see if its size is realistic for the virtual storage available.

MVS Considerations

In MVS the program code, Fortran-supplied subroutines, and input/output buffers are loaded into the REGION of the execution step ("GO" step). Unlike CMS, none of the region is occupied by system code. However, the MVS user may have to contend with large space requirements from input/output buffers.

The default execution region is 1024K. Users can request up to 4096K. Running programs which

require more region should be coordinated with Roy Romo, Manager of Operations, In-108.

To increase the execution region on the EXEC statement,

```
// EXEC FORTVCLG,REGION.GO=2048K
```

To see the total region required by the user's program and Fortran-supplied subroutines, request the MAP option in the linkage editor step.

```
// EXEC FORTVCLG,PARM.LKED=MAP
```

At the bottom of the output from the linkage editor will be a statement such as

```
TOTAL LENGTH    E11A0
```

E11A0 (hex) or 922,016 (decimal) bytes is the total size of the user's programs and the necessary Fortran-supplied subroutines. With small enough input/output buffers, this program would fit in a region of 1024K.

Data on MVS disks and tapes are often organized into large block sizes (BLKSIZE). Ordinarily, MVS sets aside input/output buffer space equal to twice the block size for each GO step DD statement.

Assume the Fortran program is reading a data file with logical record length (LRECL) 80 and BLKSIZE=16000. MVS will set aside 32,000 bytes for this file's buffer. The region available to the program is reduced by 32,000 bytes.

Large block sizes are used in MVS to pack more data into a storage device and to increase transmission efficiency between the device and the CPU. The drawback of large block sizes is increased region space taken up by the buffers.

MVS allows the programmer to reduce the number of buffers with the DCB parameter BUFNO. Reducing the BUFNO to 1 increases available region while sacrificing efficiency.

Hexadecimal Arithmetic

The IBM mainframe reports space usage in hexadecimal (base 16). To convert to decimal, use the CMS exec named HEX. For example, type:

```
hex e11a0
```

Response:

```
hex E11A0 = 922016 or 900.41K
```

Dennis Mar

IMSL Questions and Answers

Note: The following was adapted from "Directions", published by IMSL. Inc.

Q. Many IMSL subroutine names changed from version 9.2 to version 10.0 How can one find the relationship between the edition 9.2 names and the new name?

A. Use the Library Interface routines. These subroutines have Edition 9.2 names and calling sequences, but call the Version 10.0 Libraries internally. The procedures are contained in the IMSL technical report "IMSL Libraries Edition 10.0 Update Guide" a copy of which is available for reference in the consulting office, In-146.

Q. Can the IMSL routines be viewed on line?

A. Yes. Use the LIBSOURCE Exec and specify the library from which you would like to see a member. Respond to the questions it asks. This procedure also allows you to copy the source code of routines to your A-disk.

Q. Some input parameters in my program have different values on output. Why?

A. The value of an input parameter may change if:
The value is an input/output parameter.
The value is an array and the array dimensions are not correct.
The precision of the parameter is not correct.

Q. How many unique random numbers can be generated with the IMSL Libraries?

A. 2^{31}-2.

Q. Once a seed is set, does it need to be reset each time a random number generator is called?

A. No, the seed is updated and passed in COMMON from one routine to another.

Q. Is a seed required when using one of the IMSL random number generators?

A. No, if RNSET is not used to set a seed, the system clock will be used to set the initial seed.

Q. How do you get standard errors for the estimated regression parameters from a non--linear regression fitting (RNLIN)?

A. The asymptotic variance-covariance matrix for the estimates can be obtained by calling RCOVB with the input R and S2 = SSE/DFE from RNLIN. Then take the square root of the diagonals from the variance-covariance matrix to get the standard errors. This is an approximation useful in large sample problems.

Q. When I execute a call to an IMSL routine several times, I obtain warning messages each time. How can I avoid the printing of this message?

A. Users can control the output of error messages through use of the ERSET routine. ERSET is explained in the section "Reference Material - User Errors" of the V 10.0 user's manuals. Another routine UERSET is explained in the V 9.2 user's manuals under "Library Characteristics, Introduction, Section 5.5".

Neil Harvey

SAS News

New SAS Procedures on MVS

MLOGIT and MPROBIT are two new SAS procedures which have been purchased from Salford Systems and installed on the MVS batch processing system. The documentation for both of them is available in the Consulting Office, In-146, along with other SAS documentation.

MPROBIT is a binary probit procedure for the maximum likelihood estimation of models with binary dependent variables. The procedure produces parameter estimates, variance-covariance matrices, log likelihood values, predicted z-scores and inverse Mill's ratios.

These statements in your SAS code are required to use the MPROBIT procedure:

```
PROC MPROBIT options;
  MODELn variables;
  BY variables;
```

See the documentation for information on options that may be specified with the PROC statement. The dependent variable is listed first on the MODEL statement, followed by the independent variables. The BY statement obtains separate analyses for subgroups of the input dataset defined by the BY variable(s).

MLOGIT is a multinomial logit procedure for the estimation of regression models with qualitative (categorical) dependent variables by the method of maximum likelihood. Both conditional and polytomous models can be estimated. The procedure computes parameter estimates, variance-covariance matrices, log likelihood values and the derivatives of the predicted probabilities with respect to the independent variables.

To invoke the MLOGIT procedure use these commands:

```
PROC MLOGIT NCAT=integer options;
  WEIGHT variable;
  PARMCARDS4;
  MODEL dependent variable = independent variables;
  MODEL dependent variable = conditional_variable_clauses;
  MODEL dependent variable = dependent variables
                             conditional_variable_clauses;
  ;;;;
  NCHOICES variable;
```

In the MLOGIT procedure statement, NCAT is the number of categories of the dependent variable. The documentation should be consulted for a detailed explanation of available options. The WEIGHT statement is optional and can be used to weight the observations as they enter the likelihood function. The PARMCARDS4 statement is required and must appear before the MODEL statement(s). The MODEL statement can be conditional. The documentation provides the details for this type of MODEL. The semicolons statement (;;;;) is required, and the NCHOICES statement may be used only when estimating a conditional logit model.

Helen Davis

New 'SAS On MVS' Technical Note

A new technical note has been published by the User Services Group to assist students and faculty in using SAS in the MVS environment. This publication reviews some basics about using the SAS language and gives detailed examples for using it to create permanent data sets stored under DFHSM and on tape. The new technical note is designated TN MVS-08, *SAS on MVS*. Copies are available in the Consulting Office, In-146.

Helen Davis

New Execs for SAS Data Sets

Trying to determine how much space to allocate for a SAS file can be a tedious and sometimes confusing exercise. Two new EXECs are now available, SASBLKM (for MVS) and SASBLKC (for CMS), to assist the SAS user in arriving at a reasonable allocation size.

Both EXECs will ask for three entries regarding the data set to be created: the number of variables, the number of observations, and the length of an observation. To quickly describe each:

# of Variables: The count of measurements such as, heart rate, day of the week, or Social Security Number.

# of Observations: The number of rows of data such as, the number of people surveyed, or the number of birds observed.

Length of an Observation: Calculated by adding the length of each variable. Default length for numeric and character variables is eight bytes. If variables are formatted, then use the formatted lengths in the sum.

The EXEC for MVS (batch SAS) can be executed by typing SASBLKM. This returns a primary and secondary space allocation recommendation in either TRacKs or CYLinders, depending upon the size of the file.

The EXEC for CMS can be executed with SASBLKC. This EXEC returns the estimated number of CMS blocks the SAS file will require. To determine if there is an adequate number of blocks available on the A-disk, type Q DISK from the CMS *Ready;* mode. This returns information on the disks attached to your virtual machine in the following format:

```
LABEL CUU M STAT  CYL .... BLKS USED-(%)  BLKS LEFT BLK TOTAL
xxxxp 191 A  R/W   4 ....    339 - 57       261       600
```

Look for your USERID under LABEL and 'A' under M (for Mode) for your A-disk. The item BLKS LEFT represents the number of CMS blocks left on that disk to write a new file.

Any questions or recommendations should be addressed to Karen Yates, In-111, X-2539, 0149p.

Karen Yates

Miscellaneous

DDN News

RFC (Request for Comments) 1109, *Report of the Second Ad Hoc Network Management Review Group*, is now available from the Network Information Center (NIC). A copy has been placed on the DDN disk to which you are linked when you issue the DDNLINK command.

The new RFC documents the Internet Activities Board (IAB) policy on network management in the Internet.

To see which RFCs are available locally,

```
DDNLINK <enter>
FILEL RFC* TXT P <enter>
```

RFCs can be obtained via anonymous FTP from NIC.DDN.MIL, using the pathname RFC:RFCnnnn.TXT (where "nnnn" is the number of the RFC desired).

```
GETSTOR 1500K <enter>
DDNLINK <enter>
FTP <enter>
NIC.DDN.MIL <enter>
anonymous   <enter>
guest       <enter>
GET RFC:RFCnnnn.TXT <enter>
  (wait for "Transfer Complete" message)
QUIT <enter>
```

Caroline Miller

Personnel Notes

Since the last Bulletin, two people from the Computer Center have moved to new jobs. Valerie Franco left Operations to work for the Defense Manpower Data Center in Monterey. As a PL/1 programmer she will be involved in the maintenance of the active duty personnel files. We offer her our best wishes in her new job.

Donna Schoenecker left the Microcomputer Lab to become the NPS ADP security officer in the management information systems office. Her principal job will be implementing the new ADP security plan. This task will include risk assessment and user education. In addition she will coordinate requests for ADP purchases forwarded to the reviewing board.

Donna has been a mainstay in the Microcomputer Lab for three years. Donna is well-known for her interest in user education and documentation. We congratulate her on her promotion and will miss her enthusiasm and helpfulness.

Fortunately for all of us, we welcome two well-qualified people to the Computer Center. Yvette Grady joins Operations as a computer operator. She formerly worked at the Defense Language Institute where she was a training technician. An Army spouse, she was graduated from Henry Ford Community College, Dearborn, Michigan, with a degree in computer information systems. She will be working the day shift, Saturday through Wednesday.

Jim Horning has joined the staff of the Micro Lab. He will be consulting with students and performing network operating system support functions. Jim is a 1988 graduate of Cal Poly at San Luis Obispo with an engineering degree in computer science. He has worked as a systems programmer for various companies while attending school and since graduation.

Dennis Mar

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